Mumbai University

Syllabus + Books

B.Sc.IT: Semester – V

(Syllabus)

[2018 – 2019]

PAPER - IV

ELECTIVE – I

Linux System Administration

– : SYLLABUS : –

UNIT I

RED HAT ENTERPRISE LINUX | COMMAND LINE | SYSTEM ADMINISTRATION TASKS | MANAGING SOFTWARE

⇒ **Introduction To Red Hat Enterprise Linux:**
- *Linux*
- *Open Source and Red Hat*
- *Origins Of Linux*
- *Distributions*
- *Duties Of Linux System Administrator*

⇒ **Command Line:**
- *Working With The Bash Shell*
- *Getting The Best Of Bash*
- *Useful Bash Key Sequences*
- *Working With Bash History*
- *Performing Basic File System Management Tasks*
- *Working With Directories*
- *Piping And Redirection*
- *Finding Files*

⇒ **System Administration Tasks:**
- *Performing Job Management Tasks*
- *System And Process Monitoring And Management*
- *Managing Processes With ps*
- *Sending Signals To Processes With The Kill Command*
- *Using Top To Show Current System Activity*
- *Managing Process Niceness*
- *Scheduling Jobs*
- *Mounting Devices*
- *Working With Links*
- *Creating Backups*
- *Managing Printers*
- *Setting Up System Logging*
- *Setting Up Rsyslog*
- *Common Log Files*
- *Setting Up Logrotate*

⇒ **Managing Software:**
- *Understanding RPM*
- *Understanding Meta Package Handlers*
- *Creating Your Own Repositories*
- *Managing Repositories*
- *Installing Software With Yum*
- *Querying Software*
- *Extracting Files From RPM Packages*

UNIT II

CONFIGURING AND MANAGING STORAGE | CONNECTING TO THE NETWORK | GROUPS AND PERMISSIONS | BASIC PERMISSIONS

⇒ **Configuring And Managing Storage:**
- *Understanding Partitions And Logical Volumes*
- *Creating Partitions*
- *Creating File Systems*
- *File Systems Overview*

Turn Over ☞

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LINUX SYSTEM ADMINISTRATION

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- Creating File Systems
- Changing File System Properties
- Checking The File System Integrity
- Mounting File Systems Automatically Through fstab
- Working With Logical Volumes
- Creating Logical Volumes
- Resizing Logical Volumes
- Working With Snapshots
- Replacing Failing Storage Devices
- Creating Swap Space
- Working With Encrypted Volumes

⇒ **Connecting To The Network:**
- Understanding NetworkManager
- Working with Services and Runlevels
- Configuring The Network With NetworkManager
- Working With System-Config-Network
- NetworkManager Configuration Files
- Network Service Scripts
- Networking From The Command Line
- Troubleshooting Networking
- Setting Up IPv6
- Configuring SSH
- Enabling the SSH Server
- Using the SSH Client
- Using PuTTY On Windows Machines
- Configuring Key-Based SSH Authentication
- Using Graphical Applications with SSH
- Using SSH Port Forwarding
- Configuring VNC Server Access Working With Users

⇒ **Groups And Permissions:**
- Managing Users And Groups
- Commands For User Management
- Managing Passwords
- Modifying and Deleting User Accounts
- Configuration Files
- Creating Groups
- Using Graphical Tools for User and Group Management
- Using External Authentication Sources
- The Authentication Process
- sssd
- nsswitch
- Pluggable Authentication Modules
- Managing Permissions
- The Role Of Ownership

⇒ **Basic Permissions:**
- Read, Write And Execute
- Advanced Permissions
- Working With Access Control Lists
- Setting Default Permissions With umask
- Working With Attributes

Turn Over ☞

UNIT III

SECURING SERVER WITH iptables | SETTING UP CRYPTOGRAPHIC SERVICES | CONFIGURING SERVER FOR FILE SHARING

⇒ **Securing Server With iptables:**
  - *Understanding Firewalls*
  - *Setting Up A Firewall With System-Config-Firewall*
  - *Allowing Services*
  - *Trusted Interfaces*
  - *Masquerading*
  - *Configuration Files*
  - *Setting Up A Firewall With iptables*
  - *Tables*
  - *Chains And Rules*
  - *Composition Of Rule*
  - *Configuration Example*
  - *Advanced iptables Configuration*
  - *Configuring Logging*
  - *The Limit Module*
  - *Configuring NAT*

⇒ **Setting Up Cryptographic Services:**
  - *Introducing SSL Proof Of Authenticity*
  - *The Certificate Authority*
  - *Managing Certificates With openssl*
  - *Creating A Signing Request*
  - *Working With GNU Privacy Guard*
  - *Creating GPG Keys*
  - *Key Transfer*
  - *Managing GPG Keys*
  - *Encrypting Files With GPG*
  - *GPG Signing*
  - *Signing RPM Files*

⇒ **Configuring Server For File Sharing:**
  - *What Is NFS?*
  - *Advantages And Disadvantages Of NFS*
  - *Configuring NFS4*
  - *Setting Up NFSv4*
  - *Mounting An NFS Share*
  - *Making NFS Mounts Persistent*
  - *Configuring Automount*
  - *Configuring Samba*
  - *Setting Up A Samba File Server*
  - *Samba Advanced Authentication Options*
  - *Accessing Samba Shares*
  - *Offering FTP Services*

UNIT IV

CONFIGURING DNS AND DHCP | SETTING UP A MAIL SERVER | CONFIGURING APACHE ON RED HAT ENTERPRISE LINUX

⇒ **Configuring DNS And DHCP:**
  - *Introduction To DNS*
  - *The DNS Hierarchy*
  - *DNS Server Types*
  - *The DNS Lookup Process*

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- ▪ *DNS Zone Types*
- ▪ *Setting Up A DNS Server*
- ▪ *Setting Up a Cache-Only Name Server*
- ▪ *Setting Up A Primary Name Server*
- ▪ *Setting Up A Secondary Name Server*
- ▪ *Understanding DHCP*
- ▪ *Setting Up A DHCP Server*
- ⇒ **Setting Up A Mail Server:**
  - ▪ *Using The Message Transfer Agent*
  - ▪ *The Mail Delivery Agent*
  - ▪ *The Mail User Agent*
  - ▪ *Setting Up Postfix As An SMTP Server*
  - ▪ *Working With Mutt*
  - ▪ *Basic Configuration*
  - ▪ *Internet Configuration*
  - ▪ *Configuring Dovecot For POP And IMAP*
- ⇒ **Configuring Apache On Red Hat Enterprise Linux:**
  - ▪ *Configuring The Apache Web Server*
  - ▪ *Creating A Basic Website*
  - ▪ *Understanding The Apache Configuration Files*
  - ▪ *Apache Log Files*
  - ▪ *Working With Virtual Hosts*
  - ▪ *Securing The Web Server With TLS Certificates*
  - ▪ *Configuring Authentication*
  - ▪ *Setting Up Authentication With .htpasswd*
  - ▪ *Configuring LDAP Authentication*
  - ▪ *Setting Up MySQL*

UNIT V

INTRODUCING BASH SHELL SCRIPTING | HIGH-AVAILABILITY CLUSTERING | SETTING UP AN INSTALLATION SERVER

- ⇒ **Introducing Bash Shell Scripting:**
  - ▪ *Introduction*
  - ▪ *Elements Of A Good Shell Script*
  - ▪ *Executing The Script*
  - ▪ *Working With Variables And Input*
  - ▪ *Understanding Variables*
  - ▪ *Variables*
  - ▪ *Subshells And Sourcing*
  - ▪ *Working With Script Arguments*
  - ▪ *Asking For Input*
  - ▪ *Using Command Substitution*
  - ▪ *Substitution Operators*
  - ▪ *Changing Variable Content With Pattern Matching*
  - ▪ *Performing Calculations*
  - ▪ *Using Control Structures*
  - ▪ *Using if...then...else*
  - ▪ *Using Case*
  - ▪ *Using While*
  - ▪ *Using Until*
  - ▪ *Using For*
  - ▪ *Configuring Booting With GRUB*
- ⇒ **High-Availability Clustering:**
  - ▪ *High-Availability Clustering*

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- *The Workings Of High Availability*
- *High-Availability Requirements*
- *Red Hat High-Availability Add-on Software*
- *Components*
- *Configuring Cluster-Based Services*
- *Setting Up Bonding*
- *Setting Up Shared Storage*
- *Installing The Red Hat High Availability Add-On*
- *Building The Initial State Of The Cluster*
- *Configuring Additional Cluster Properties*
- *Configuring A Quorum Disk*
- *Setting Up Fencing*
- *Creating Resources And Services*
- *Troubleshooting A Nonoperational Cluster*
- *Configuring GFS2 File Systems*

⇒ **Setting Up An Installation Server:**
- *Configuring A Network Server As An Installation Server*
- *Setting Up A TFTP And DHCP Server For PXE Boot*
- *Installing The TFTP Server*
- *Configuring DHCP For PXE Boot*
- *Creating The TFTP PXE Server Content*
- *Creating A Kickstart File*
- *Using A Kickstart File To Perform An Automated*
- *Installation*
- *Modifying The Kickstart File With*
- *System-Config-Kickstart*
- *Making Manual Modifications To The Kickstart File*

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– : BOOKS : –

1.
BOOK TITLE: RED HAT ENTERPRISE LINUX 6 ADMINISTRATION
AUTHOR'S: SANDER VAN VUGT
PUBLISHER: WILEY
YEAR: 2013
PAPERBACK: 672 PAGES
DOWNLOAD/BUY: @BLOGGER | @PDF | @TORRENT

2.
BOOK TITLE: RED HAT LINUX NETWORKING AND SYSTEM ADMINISTRATION
AUTHOR'S: TERRY COLLINGS | KURT WALL
PUBLISHER: WILEY
EDITION: 3RD
YEAR: 2005
PAPERBACK: 992 PAGES
DOWNLOAD/BUY: @BLOGGER | @AMAZON | @FLIPKART

3.
BOOK TITLE: LINUX ADMINISTRATION: A BEGINNER'S GUIDE
AUTHOR'S: WALE SOYINKA
PUBLISHER: MCGRAW-HILL
EDITION: 5TH
YEAR: 01/JULY/2017
PAPERBACK: 736 PAGES
DOWNLOAD/BUY: @BLOGGER | @PDF | @TORRENT

4.
BOOK TITLE: RED HAT RHCSA/RHCE 7 CERT GUIDE
AUTHOR'S: SANDER VAN VUGT
PUBLISHER: PEARSON
YEAR: 08/SEPTEMBER/2015
PAPERBACK: 1008 PAGES
DOWNLOAD/BUY: @BLOGGER | @PDF | @TORRENT